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AUTHOR Kenney, Jane L.; Dusewicz, Russell A.
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ABSTRACT

This report on trends in school improvement test results presents an analysis and synthesis of 1978-1984 student performance data from four state-mandated testing programs: (1) the Educational Quality Assessment Program in Pennsylvania; (2) the Minimum Basic Skills Program in New Jersey; (3) the Delaware Educational Assessment Program in Delaware; and (4) the California Achievement Tests in Maryland. Although the overall goal of each state program is assessing performance related to designated learning objectives, the programs vary widely in basic content and analytic approach. The assessment analyzed performance data at the elementary, intermediate, and secondary levels of schooling, focusing on year-to-year trends. The analysis had two major components: (1) assessment of the common performance areas of reading and mathematics; and (2) the assessment of unique performance areas which addressed content skills only with a particular state (self-esteem, understanding others, writing, interest in school, social responsibility, knowledge of law and government, health, creativity, career awareness, appreciating human accomplishments, and knowledge of human accomplishments, in Pennsylvania; spelling and language, in Delaware; and language, in Maryland). The findings suggest that student achievement performance trends in the four state regions are generally positive and consistent with results of the National Assessment of Educational Progress. Long term trends tend to be most positive at the elementary level and decrease at the intermediate and secondary levels, suggesting that more attention be given to school improvement programs aimed at secondary education. (BS)

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TRENDS IN SCHOOL IMPROVEMENT

STATE-WIDE TEST RESULTS

1978-1984

Jane L. Kenney
Russell A. Dusewicz

Research for Better Schools
444 North Third Street
Philadelphia, Pennsylvania 19123

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INTRODUCTION

This document represents part of an overall regional needs assessment effort undertaken by Research by Better Schools (RBS). The needs assessment function at RBS is an integral part of the laboratory's overall planning and development process. Needs assessment activities are intended to facilitate review of the regional responsiveness of current laboratory programs, possible redirection of programs or establishment of new programs, and feedback to the National Institute of Education, as well as state departments of education, regarding empirically derived needs. One of the major needs assessment activities is the examination of student performance data related to designated learning goals for each of the states in the region surrounding RBS (PA, NJ, DE, MD).

Each state education agency (SEA) in this region has a mandated testing program to assess student performance, particularly in the basic skills areas. Pennsylvania has the Educational Quality Assessment (EQA) Program; New Jersey has the Minimum Basic Skills (MBS) Program; Delaware has the Delaware Educational Assessment Program (DEAP); and Maryland uses the California Achievement Tests (CAT) for norm-referenced testing. Table 1 presents an overview of the four testing programs discussed in this report.[1]

As can be seen in Table 1, although the overall goal of each state program aims at the assessment of performance related to designated learning objectives, the programs vary widely with regard to basic content and analytic approach. The respective programs compare student performance

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[1] Other assessment programs or procedures are also used: e.g., Pennsylvania has a criterion-referenced testing program; New Jersey has recently begun administering a high school proficiency test; and Maryland's Project Basic program includes criterion-referenced testing for high school graduation.

Table 1
Overview of State Testing Programs

State	Testing Program	General Context	Grades Tested	Statewide Norming Score Types	Testing Sample	Primary Unit of Analysis/Reporting
PA	Educational Quality Assessment (EQA)	State-developed test with 14 subtests: reading, math, self-esteem, understanding others, writing, interest in school, societal responsibility, knowledge of law/govt., health, creativity, career awareness, appreciating human accomplishments, knowledge of human accomplishments, information usage	5, 8, 11	raw scores	voluntary, required every 5 years (different sample each year)	school level
NJ	Minimum Basic Skills (MBS)	State-developed test with reading and math subtests	9, 10* (in 1983) 9 (in 1984)	MBS scores (equated to 1978 test sample)	all districts, each year	district level
DE	Delaware Educational Assessment Program (DEAP)	California Achievement Test (CAT) in 4 major areas: reading, mathematics, spelling, language (1978-1983) Comprehensive Test of Basic Skills (CTBS) in four major areas: reading, mathematics, spelling, language (1984)	1-8, 11	normal curve equivalents (NCE), referenced to national norms	all districts, each year	state, district, and school levels
MD	Assessment Program	California Achievement Test (CAT) in 3 major areas: reading comprehension, mathematics, and language	3, 5, 8	scale scores	all districts, each year	state, district, and school levels

*From 1978 to 1982, the MBS test was administered to students in grades 3, 6, 9, and 11. In 1983, the test was administered only to 9th and 10th grade students, and in 1984 only to 9th grade students, since New Jersey is shifting from a minimum competency test to a wider ranging high school proficiency examination.

with either statewide norms (Pennsylvania), national norms (Delaware and Maryland), or state-established success criteria (New Jersey). In Delaware and Maryland commercial standardized test series (the California Achievement Test and the Comprehensive Test of Basic Skills) are used, while the other two states use locally developed instrument packages. The Pennsylvania EQA includes 14 subtests addressing several different types of outcomes, whereas the New Jersey MBS focuses primarily on two areas of basic skills learning (although a writing assessment will be added). Maryland's testing includes reading comprehension, mathematics, and language. Delaware, in addition to reading, mathematics, and language, assesses students' skills in spelling. Each state administers these tests to different grades.

Delaware, New Jersey, and Maryland samples are relatively consistent from year to year, while Pennsylvania samples differ since participation in the test is voluntary to some extent. Each state reports norms in terms of different scoring procedures. In addition, the primary unit for reporting test results differs between states. For Pennsylvania, individual schools are intended as the primary units of analysis, whereas districts are intended as the primary units for New Jersey's MBS test. In Delaware and Maryland results are analyzed and reported at multiple levels.

This report on trends in school improvement test results presents an analysis and synthesis of student performance data collected through state-mandated testing programs from 1978 to 1984. Subsequent sections of the report describe the analysis approach, discuss performance results, and summarize conclusions based on the analysis.[2]

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[2]This report is the third in a series of reports examining trends in state-wide test results: Biester, T. and Dusewicz R. Trends in School Improvement State-Wide Test Results. Philadelphia: Research for Better Schools, 1982; Biester T. and Dusewicz, R. Trends in School Improvement State-Wide Test Results, 1978-1983. Philadelphia: Research for Better Schools, 1983.

ANALYSIS APPROACH

The RBS assessment of student performance in the four states consisted of a secondary analysis of existing data available from the statewide testing programs. The analysis had two major components:

- assessment of common performance areas
- assessment of unique performance areas.

The analysis of common performance areas focused on assessment of student basic skills achievement (i.e., reading and math). The analysis of unique performance areas addressed content skills assessed only within a particular state (e.g., self-esteem in Pennsylvania).

Performance data were analyzed at three levels of schooling:

- elementary
- intermediate
- secondary

The grades tested were somewhat different across states. Results from grades 5, 8, and 11 were available to assess the three respective levels for Pennsylvania and Delaware. Results from grades 6, 9, and 11 were available for New Jersey for 1978 through 1982, but only grade 9 in 1983 and 1984. For Maryland, grades 5 and 8 were used for the elementary and intermediate levels. No data were available at the secondary level since the CAT is not used beyond grade 8.

A major focus of the analysis was upon year-to-year trends in student performance. This year's (1984) test results were examined in light of results of prior years to determine if performance was stable, improving, or declining. Baseline data from the 1977-1978 school year, as well as

from several subsequent years, were available from three states. Maryland began using the CAT in 1980-1981, so the test results from 1977 to 1980 had be estimated using the method of least squares.

Although the analysis of trends within a state is relatively straight-forward, the synthesis of results across states was difficult due to the major differences between test content, norms, and types of scores. The analysis of trends across states required the conversion of existing test scores to a common testing metric. For this purpose, baseline scores (i.e., 1978 mean scores) were arbitrarily set as standard scores of 50, and converted standard score means for subsequent years were compared to the baseline distributions. All scores were converted to standard scores based on a mean of 50 and a standard deviation of 21.06. This resulted in an equal interval scale with a hypothetical range from 1 to 99. Trends on different tests could therefore be analyzed in a gross sense across states, recognizing that student populations and specific test content differed.

In addition, achievement data from the National Assessment of Educational Progress (NAEP) were analyzed to provide a perspective on the performance of students within the RBS region relative to national norms. Reading assessment results are available for 1970, 1975, and 1980; mathematics assessments were conducted in 1973, 1978, and 1982. Results were reported at national and regional levels, but not a state levels.

While it is useful and appropriate to compare trends in statewide test results across states, individual point scores and the magnitude of such scores are not directly comparable for several reasons. There are several limitations in the approach used to analyze results across states. Even

though a common score metric was derived, no direct comparison between state achievement levels at individual points can be made because each test differs with regard to content, difficulty level, norming samples, and other psychometric properties. The fact that two states may have equal standard scores does not imply that the relative level of actual student performance is equal. Likewise, the standard scores should not be regarded as normal curve equivalents (NCEs) based on national norms. A standard score of 50 in the reported analyses does not mean that achievement is at the national average; indeed, it may be significantly above or below the national average. All reported standard scores are based solely on the distribution of scores for students tested in each respective state. The purpose of the conversion of scores to a standard score metric is to enable meaningful indications of gross trends only.

Another consideration in the analysis related to the comparability of student samples from year to year. In Pennsylvania, since participation in the program from year to year is somewhat voluntary (i.e., districts are required to participate only once every five years), the sample of districts changes from year to year. For example, Pennsylvania officials reported that a disproportionately high number of vocational students were tested in 1982. To some extent, Pennsylvania controls for annual variations by choosing a norming sample based on school district size and wealth. In New Jersey, since only certain grades are tested each year, the grade level populations may change from year to year. In addition, even though all districts in New Jersey, Delaware, and Maryland are tested each year, student populations participating in the testing program may differ from year to year due to such factors as mobility or changing group

composition. Group composition may change as a result of student classifications in special education or English as a Second Language (ESL), since such students are exempted from testing. The actual extent to which statewide samples change from year to year is not known. The assumption in the analysis is that changes are not systematic and that samples are esentially comparable. However, sampling variations limit the accuracy of the year-to-year trend analyses.

Due to the various design limitations, the findings should be viewed cautiously. There may be several plausible explanations for year-to-year changes, including instructional changes and changes in student characteristics. The accumulated data should be considered as a gross indication of generic student performance trends.

The RBS analysis of student performance data consisted of two components--an analysis of common performance areas and an analysis of unique performance areas. Each analysis component is presented separately in the following sections of the report.

ASSESSMENT OF COMMON PERFORMANCE AREAS

All state testing programs addressed student performance in reading and mathematics. Results for each grade level, by state, are presented in Tables 2 and 3. These do not include scores for ESL or special education students. Converted standard scores are reported for each of the last five school years as well as for the baseline year (1978). Unconverted scores are presented in the Appendix. Change scores over the last three school years and the entire period are also reported. As indicated in discussion of study limitations above, results should be cautiously interpreted. Scores displayed in Tables 2 and 3 are graphically presented in Figures 1 and 2 to illustrate performance trends by state. Figures 3 and 4 show average performance trends across all the states.

Reading Trends

Long term trends from 1978 to 1984 showed improvement in reading at all grade levels across all states. Overall reading trends clearly indicate that results are strongest at the elementary and intermediate levels and weakest at the secondary level.

Yearly score comparisons from 1981 on showed that scores in Pennsylvania declined slightly from 1981 to 1982 at the secondary level and from 1982 to 1983 at the elementary level. However, these scores improved in subsequent years. These results could be due to the variable sampling of schools which would tend to make the Pennsylvania findings fluctuate more from year to year.

Scores in Delaware declined from 1983 to 1984 at all levels. This could be due to the testing instrument since Delaware began using the CTBS instead of the CAT during the 1983-84 school year.

Table 2

Statewide Student Achievement Trends: Reading*

Grade Level / State	School Year (end of year) 1978	1980	1981	1982	1983	1984	Change +/- 81-82	+/- 82-83	+/- 83-84	+/- 78-84**
Elementary Level										
Pennsylvania	50	54	52	57	55	56	+5	-2	+1	+6
New Jersey	50	55	61	66	—	—	+5	—	—	+16
Delaware	50	55	56	57	58	55	+1	+1	-3	+5
Maryland	50	53	54	57	57	59	+3	0	+2	+9
Intermediate Level										
Pennsylvania	50	51	47	51	51	54	+4	0	+3	+4
New Jersey	50	51	54	57	59	62	+3	+2	+3	+12
Delaware	50	52	55	58	60	57	+3	+2	-3	+7
Maryland	50	53	53	57	57	58	+4	0	+1	+8
Secondary Level										
Pennsylvania	50	52	48	46	50	52	-2	+4	+2	+2
New Jersey	50	48	51	52	—	—	+1	—	—	+2
Delaware	50	52	53	53	54	53	0	+1	-1	+3
Maryland+	—	—	—	—	—	—	—	—	—	—

* Performance is reported in terms of standard scores based on each state's normative distribution. Scores for 1978 are arbitrarily set equal to 50. Scores do NOT represent NCEs based on national norms and specific score points across states CANNOT be directly compared for reasons discussed in the narrative. Results indicate general trends from the 1977-78 through 1983-84 school years. Scores for 1978 and 1980 for Maryland were estimated

**For New Jersey, overall gains for the elementary and secondary levels are for the period 1978-82; for the intermediate grade level, the overall gain represents 1978-1984.

+ Maryland does not administer the CAT test at the secondary level.

Table 3

Statewide Student Achievement Trends: Mathematics*

Grade Level / State	School Year (end of year) 1978	1980	1981	1982	1983	1984	Change +/- 81-82	+/- 82-83	+/- 83-84	+/- 78-84**
Elementary Level										
Pennsylvania	50	57	53	58	57	59	+3	+1	+2	+9
New Jersey	50	60	64	67	—	--	+3	--	--	+17
Delaware	50	56	59	61	62	60	+2	+1	-2	+10
Maryland	50	54	56	60	60	63	+4	0	+3	+13
Intermediate Level										
Pennsylvania	50	52	48	51	51	53	+3	0	+2	+3
New Jersey	50	54	57	60	61	64	+3	+1	+3	+14
Delaware	50	56	59	60	61	58	+1	+1	-3	+8
Maryland	50	53	54	57	58	59	+3	+1	+1	+9
Secondary Level										
Pennsylvania	50	49	45	44	46	50	-1	+2	+4	0
New Jersey	50	52	54	56	—	—	+2	—	—	+6
Delaware	50	54	55	55	56	55	0	+1	-1	+5
Maryland+	—	—	—	—	—	—	--	--	--	—

* Performance is reported in terms of standard scores based on each state's normative distribution. Scores for 1978 are arbitrarily set equal to 50. Scores do NOT represent NCEs based on national norms and specific score points across states CANNOT be directly compared for reasons discussed in the narrative. Results indicate general trends from the 1977-78 through 1983-84 school years. Scores for 1978 and 1980 for Maryland were estimated.

**For New Jersey, overall gains for the elementary and secondary levels are for the period 1978-82; for the intermediate grade level, the overall gain represents 1978-1984.

+ Maryland does not administer the CAT test at the secondary level.

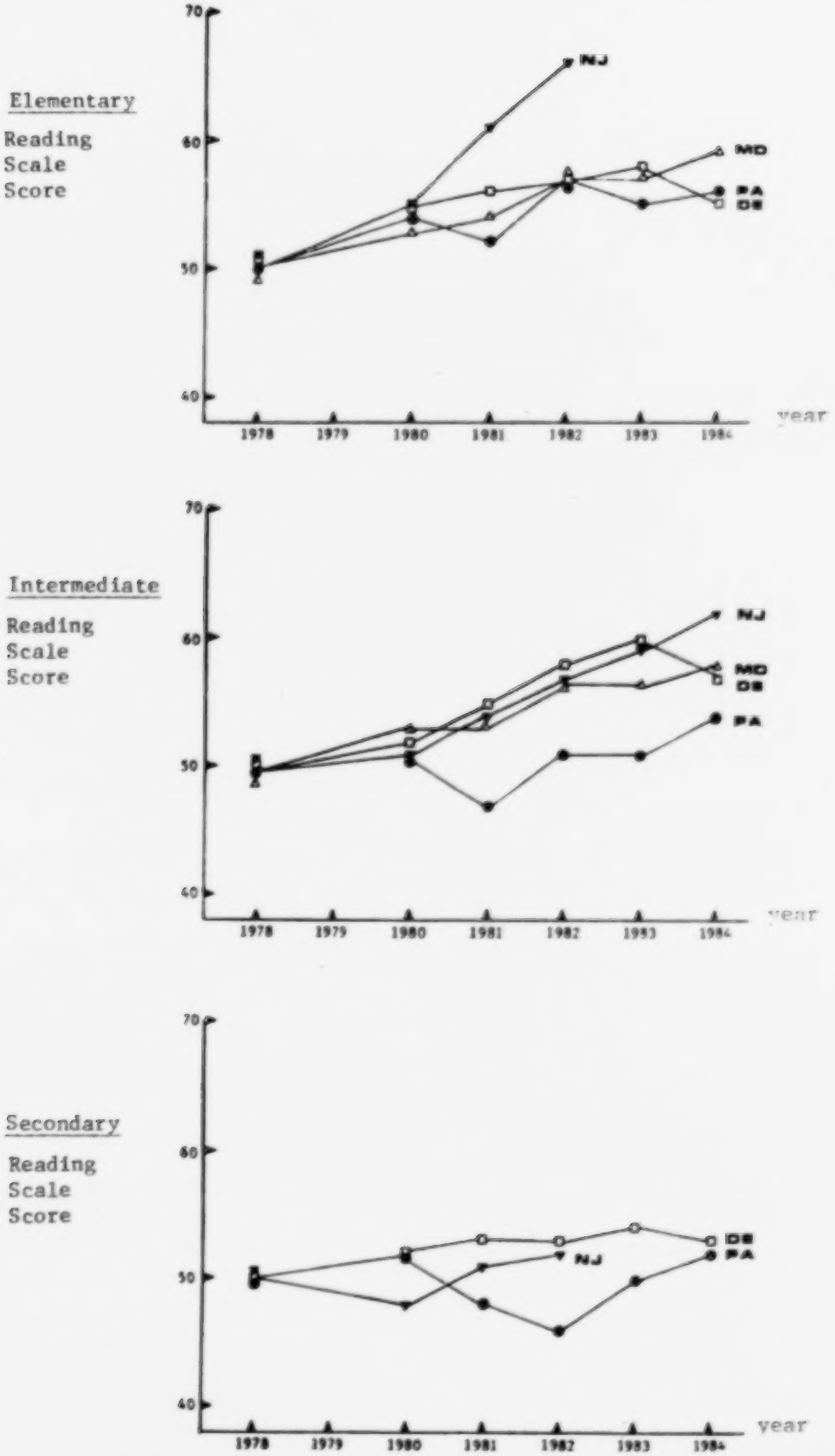

Figure 1. Student performance trends in reading achievement, by grade level, for Pennsylvania ("●"), New Jersey ("▼"), Delaware ("□"), and Maryland ("△").

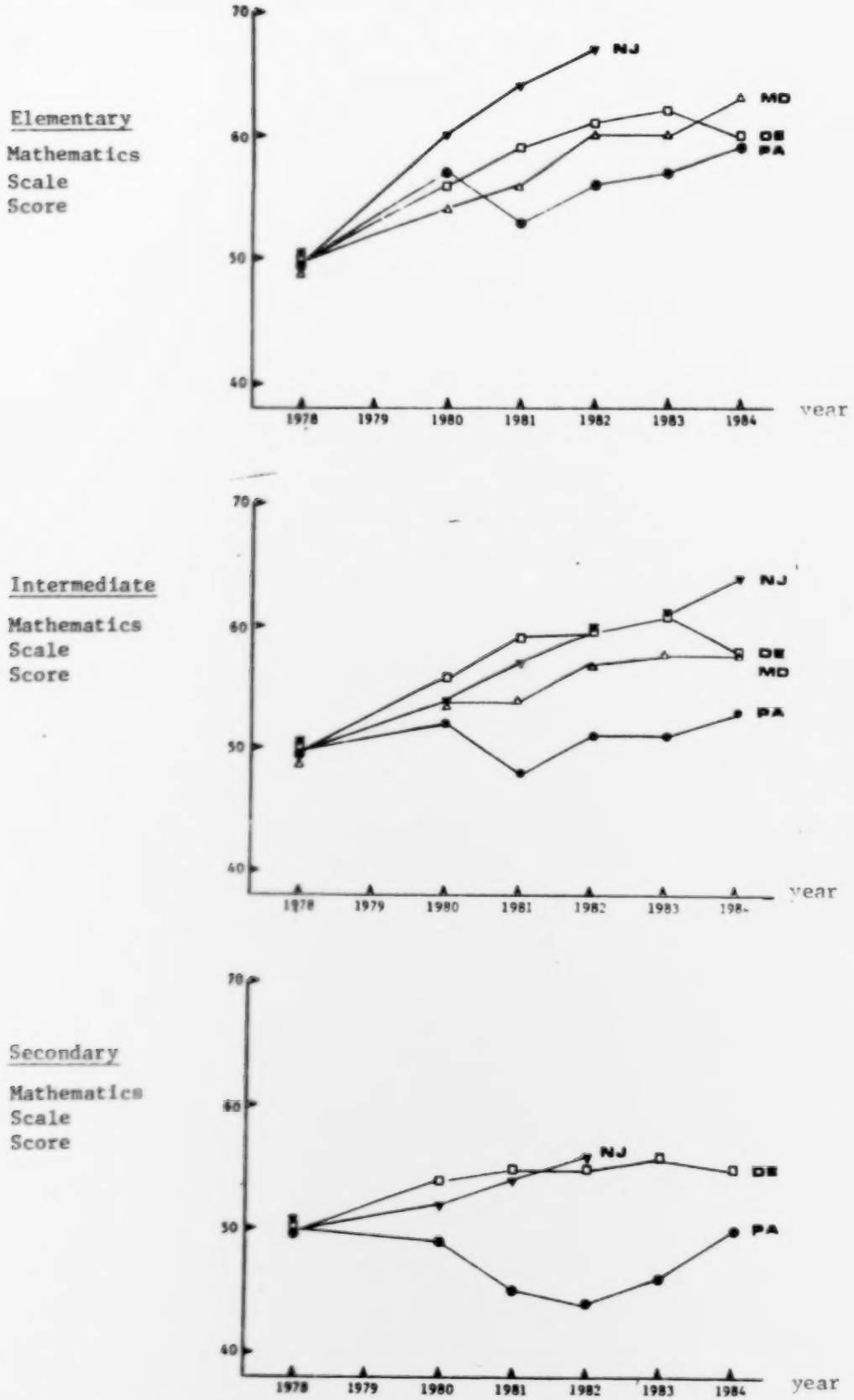

Figure 2. Student performance in mathematics achievement, by grade level, for Pennsylvania ("●"), New Jersey ("▼"), Delaware ("□"), and Maryland ("△").

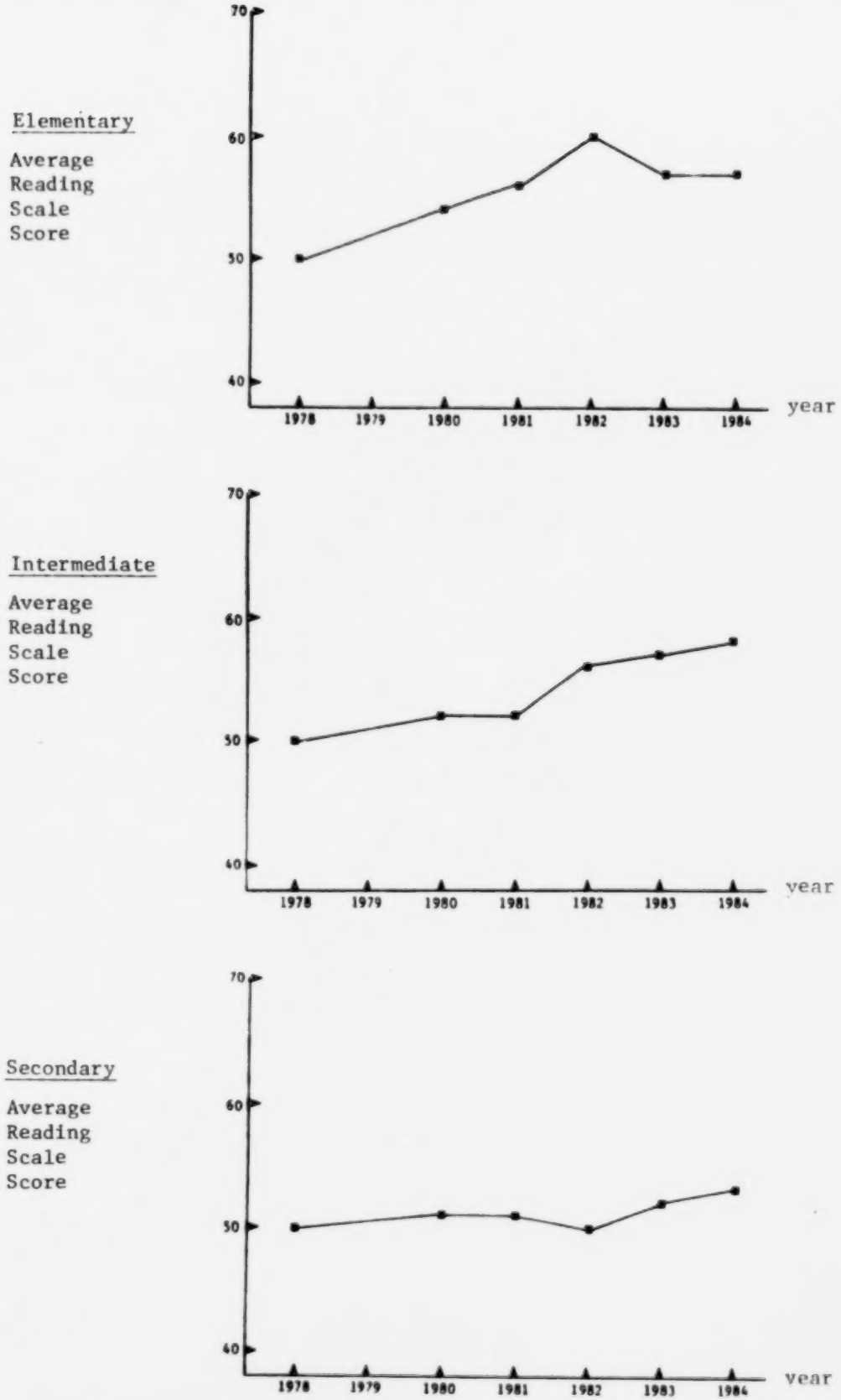

Figure 3. Average student performance trends across all states in reading achievement by grade level.

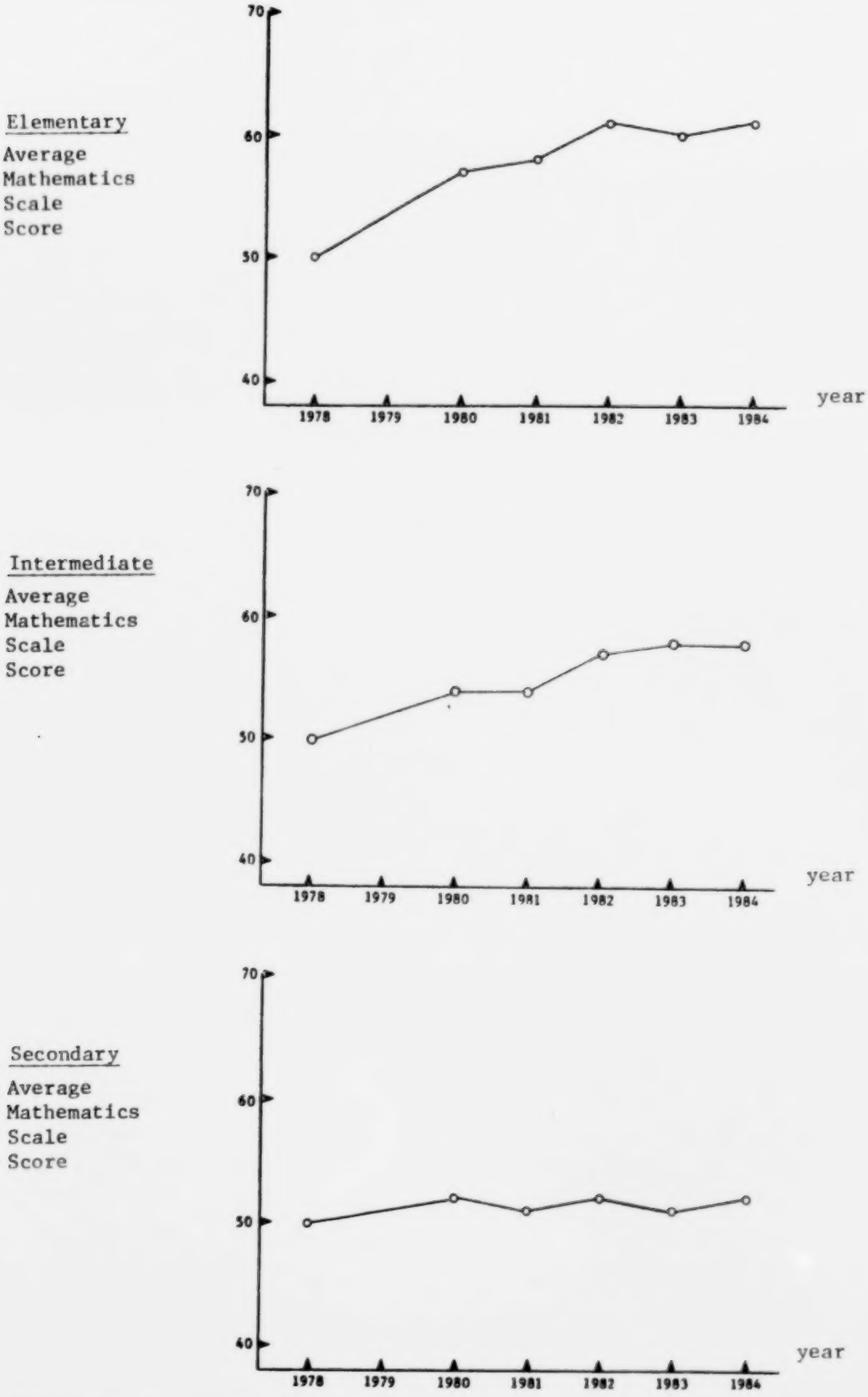

Figure 4. Average student performance trends across all states in mathematics achievement by grade level.

Scores in Maryland remained stable from 1982 to 1983 at both the elementary and intermediate levels but increased in the 1983-84 school year.

Results for the 1975-1980 comparisons in the National Assessment of Educational Progress[3] indicate improvement in reading comprehension of nine-year olds in the national sample and in the subsample for the Northeast region. Results for the 13-year old group show no significant change, while results for the 17-year old group indicate a slight, although nonsignificant, decline in reading achievement. The rate of decline for the Northeastern region subsample of 17 year olds is slightly greater than for the overall national sample. As can be seen in Figure 3 results across the statewide testing programs show trends somewhat similar to NAEP results though 1980 with elementary performance showing more improvement than intermediate and secondary. After that point, it appears that average performance trends across the states at the elementary level continue to improve until 1983 when the trend lowers and begins to level off. Results at the intermediate level show a steady increase while results for secondary schools remain relatively stable with an upward trend beginning to appear in 1983 and 1984.

Math Trends

In mathematics, long term trends from 1978 to 1984 showed improvement across all grade levels and states with the exception of Pennsylvania's scores at the secondary level which remained stable. Overall mathematics trends were most positive at the elementary grade level and least positive at the secondary level.

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[3] National Assessment of Educational Progress. The national assessments of reading: Changes in performance, 1970-1980. Denver, Colorado: Education Commission of the States, 1981.

Yearly comparisons from 1981 on showed that scores in Pennsylvania declined slightly from 1981 to 1982 at the secondary level but increased in subsequent years to remain stable over the six year period.

Scores in Delaware declined in mathematics as well as reading from 1983 to 1984 at all levels. This could be due to the change in the test instrument used.

Mathematics results for the NAEP were reported for the period from 1973 through 1982.[4] Results at various age levels are somewhat different than those for reading. Differences may reflect changes in student population and/or actual achievement from 1980 to 1982. Findings for the nine-year old group were stable across all three assessments (1973, 1978, and 1982). For 13-year olds, mathematics achievement declined during the initial period, but significantly increased from 1978 through 1982. Results for the 17-year old group declined from 1973 to 1978 but leveled off during the latter period. Authors of the report suggested that the test instruments were more sensitive to recent changes in curriculum and instruction at the intermediate grade level than for other grade levels. In addition, they added a cautionary note indicating that, although secondary school students do well on relatively easy tasks (e.g., routine computation), results for higher order tasks were not as impressive. This finding has often been noted by the recent educational literature as a result of concentrating on "minimum competencies" at the expense of higher order skills. As can be seen in Figure 4, in general, NAEP findings for

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[4]National Assessment of Educational Progress. The third mathematics assessment: Results, trends, and issues (1981-82 assessment). Denver, CO: Education Commission of the States, 1983.

intermediate and secondary grades are similar to the results across the state-wide testing programs. State mathematics trends at the elementary level are more positive than that suggested by the NAEP. Results begin to level off after 1982 at the elementary level and after 1983 at the intermediate level. Performance remains relatively stable at the secondary level.

Overall Performance

Although student achievement in Pennsylvania and New Jersey cannot be compared to national norms, CAT and CTBS results for Delaware were available in NCE scores based on the national standardization sample and CAT scale scores from Maryland could be translated into NCE scores. These results are presented in the Appendix. Overall, results indicate that, especially during recent years, Delaware and Maryland students scored higher than the national average in both reading and mathematics, particularly at the elementary grades. Likewise, these results clearly illustrate that high achievement at the lower grades tapers off by the high school level. Reading results from the NAEP assessment are similar to these findings. Scores for students in the Northeast region at all age levels are higher than the national average, particularly for the nine-year old group. Scores are not much higher than the national average for the older groups of students.

ASSESSMENT OF UNIQUE PERFORMANCE AREAS

Testing programs in Pennsylvania, Delaware, and Maryland include components in addition to reading and mathematics. These results are described below for each state. The New Jersey assessment program does not address any other subject area besides reading and mathematics and is therefore not included in this section.

Pennsylvania

Results in other areas addressed by the EQA are presented in Table 4. Average scores are reported as standard scores referenced to mean scores in 1978. The data indicate general trends by grade level, for each of the learning goals. However, it must be recognized, again, that specific point scores are not directly comparable across grade levels due to differences in the psychometric properties of the tests (e.g., test difficulty). Grade level differences are only valid in the sense of general trends from year to year. Actual raw score means are presented in the Appendix.

To some extent, trends are inconsistent, with varying patterns across subtests and grade levels. Results are more likely to fluctuate from year to year because of sampling variations.

Changes from 1983 to 1984 varied between levels. At the elementary level there were substantial increases in interest in school, societal responsibility, creativity, and appreciating human accomplishments. Scores on understanding others, writing, knowledge of law/government, health, career awareness, and information usage increased while self-esteem, and knowledge of human accomplishments remained stable. No areas declined.

Table 4

Student Achievement in Unique Performance Areas: Pennsylvania

SUBTEST Grade Level	School Year (end of year) 1978	1980	1981	1982	1983	1984	Change +/- 81-82	+/- 82-83	+/- 83-84	+/- 78-84
SELF-ESTEEM										
Elementary	50	51	50	51	53	53	+1	+2	0	+3
Intermediate	50	50	50	50	56	62	0	+6	+6	+12
Secondary	50	49	51	55	59	61	+4	+4	+2	+11
UNDERSTANDING OTHERS										
Elementary	50	55	52	53	54	55	+1	+1	+1	+5
Intermediate	50	48	45	45	48	52	0	+3	+4	+2
Secondary	50	47	48	39	43	51	-9	+4	+8	+1
WRITING										
Elementary	50	54	52	57	58	60	+5	+1	+2	+10
Intermediate	50	53	49	55	57	59	+6	+2	+2	+9
Secondary	50	50	47	47	51	55	0	+4	+4	+5
INTEREST IN SCHOOL										
Elementary	50	50	48	46	48	54	-2	+2	+6	+4
Intermediate	50	53	54	55	58	64	+1	+3	+6	+14
Secondary	50	47	53	59	62	65	+6	+3	+3	+15
SOCIETAL RESPONSIBILITY										
Elementary	50	58	50	54	50	60	+4	-4	+10	+10
Intermediate	50	62	57	60	60	70	+3	0	+10	+20
Secondary	50	48	45	44	48	60	-1	+4	+12	+10
KNOWLEDGE LAW/GOVT.										
Elementary	50	53	54	54	55	59	0	+1	+4	+9
Intermediate	50	49	49	51	51	54	+2	0	+3	+4
Secondary	50	51	48	47	49	51	-1	+2	+2	+1
HEALTH										
Elementary	50	57	54	59	58	60	+5	-1	+2	+10
Intermediate	50	55	46	47	50	58	+1	+3	+8	+8
Secondary	50	52	48	55	55	61	+7	0	+6	+11

Table 4 (continued)

SUBTEST Grade Level	School Year (end of year) 1978	1980	1981	1982	1983	1984	Change +/- 81-82	+/- 82-83	+/- 83-84	+/- 78-84
CREATIVITY										
Elementary	50	50	51	46	47	53	-5	+1	+6	+3
Intermediate	50	43	51	46	46	48	-5	0	+2	-2
Secondary	50	40	44	40	43	46	-4	+3	+3	-4
CAREER AWARENESS										
Elementary	50	55	51	56	55	57	+5	-1	+2	+7
Intermediate	50	52	51	55	55	56	+4	0	+1	+6
Secondary	50	50	48	48	50	51	0	+2	+1	+1
APPRECIATING HUMAN ACCOMPLISHMENTS										
Elementary	50	54	53	56	50	58	+3	-6	+8	+8
Intermediate	50	50	53	53	52	63	0	-1	+11	+13
Secondary	50	42	40	41	39	47	+1	-2	+8	-3
KNOWLEDGE HUMAN ACCOMPLISHMENTS										
Elementary	50	51	47	48	49	49	+1	+1	0	-1
Intermediate	50	48	44	52	46	42	+8	-6	-4	-8
Secondary	50	42	40	41	35	35	+1	-6	0	-15
INFORMATION USAGE										
Elementary	50	54	51	55	55	58	+4	0	+3	+8
Intermediate	50	50	49	51	51	55	+2	0	+4	+5
Secondary	50	51	50	47	50	53	-3	+3	+3	+3

At the intermediate level from 1983 to 1984, scores on self-esteem, interest in school, societal responsibility, health, and appreciating human accomplishments increased substantially. All areas showed increases to some extent with the exception of knowledge of human accomplishments which declined.

From 1983 to 1984, secondary scores increased in all areas except knowledge of human accomplishments (which remained stable) with substantial increases in understanding others, societal responsibility, health, and appreciating human accomplishments. For many of the secondary subtests, negative trends began to reverse in 1983-1984.

In general, subtests across all three grade levels from 1983 to 1984 either remained stable or increased with substantial increases occurring in societal responsibility and appreciating human accomplishments. Interest in school increased substantially at both the elementary and intermediate levels and health at the intermediate and secondary levels.

Delaware

Results in the other areas addressed by the DEAP (spelling and language) are presented in Table 5. Again, average scores are reported as standard scores referenced to the baseline results and should not be confused with nationally-normed NCE scores. National NCEs are presented in the Appendix.

Achievement scores in spelling and language across all three grade levels increased between 1978 to 1983, but decreased in 1984 in all areas except secondary language. These decreases reflect the trend in reading and mathematics and is probably due to the test instrument. Delaware began

Table 5

Student Achievement in Unique Performance Areas: Delaware

SUBTEST Grade Level	School Year (end of year) 1978	1980	1981	1982	1983	1984	Change +/- 81-82	+/- 82-83	+/- 83-84	+/- 78-84
SPELLING										
Elementary	50	57	58	N.A.*	62	58	--	--	-4	+8
Intermediate	50	57	59	N.A.*	59	58	--	--	-1	+8
Secondary	50	53	54	N.A.*	55	54	--	--	-1	+4
LANGUAGE										
Elementary	50	57	59	60	64	60	+1	+4	-4	+10
Intermediate	50	55	57	61	62	60	+4	+1	-2	+10
Secondary	50	53	54	56	58	58	+2	+2	0	+8

*Spelling results for 1982 not available.

using the CTBS instead of the CAT during the 1983-84 school year. Decreases were more drastic at the elementary level in both spelling and language. Even with the decline in scores during 1983-84, overall trends across the six-year period from 1978 to 1984 were positive. These trends seem to be stronger at the elementary and intermediate levels than they are for the secondary level. In relation to national norms, Delaware students score higher than national averages in spelling and language (see NCE's in Appendix).

Maryland

Results in other areas addressed by the Maryland testing program (language) are presented in Table 6. As was the case earlier for Pennsylvania and Delaware, Maryland's average scores are reported as standard scores referenced to the baseline results and should not be confused with nationally-normed NCE scores. Scale scores and NCE's are presented in the Appendix.

Achievement scores showed steady increases across the six year period from 1978 to 1984 at both the grade levels tested (elementary and intermediate).[5] Increases were greatest between 1981 and 1982. In relation to national norms, Maryland students score higher than national averages in language (see NCE's in Appendix).

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[5] Maryland began using the CAT during the 1980-81 school year. Scores for 1978 and 1980 were estimated using the method of least squares.

Table 6

Student Achievement in Unique Performance Areas: Maryland*

SUBTEST Grade Level	School Year (end of year) 1978	1980	1981	1982	1983	1984	Change +/- 81-82	+/- 82-83	+/- 83-84	+/- 78-84
LANGUAGE										
Elementary	50	54	56	59	60	62	+3	+1	+2	+12
Intermediate	50	53	54	58	58	60	+4	0	+2	+10
Secondary**	--	--	--	--	--	--	--	--	--	--

*Scores for 1978 and 1980 were estimated.

**Not tested

CONCLUSIONS

A review of results from the four statewide testing programs suggests the following conclusions with respect to both common performance areas (reading and mathematics) and unique performance areas:

- Long-term trends in basic skills across all four states tended to be most positive at the elementary levels and least positive at the intermediate and secondary level. These findings are generally consistent with NAEP results.

- In general, long-term achievement trends exhibited on New Jersey's MBS test were positive. This finding follows from results of the NAEP which found that students' performance is improving with regard to "minimum competencies." NAEP findings illustrate that today's students perform better on items testing "minimum competencies" than on items tapping "higher order cognitive" skills.

- Delaware test results show that student achievement at all grade levels exceeds national norms. However, the results also illustrate that achievement relative to national norms is much stronger at the elementary grades and that positive performance tapers off by the secondary school grades. Delaware scores dropped at all levels in 1984 probably due to a change in the testing instrument used.

- Pennsylvania results suggest that long-term student performance trends seem to be more positive at the elementary and intermediate levels than at the secondary level, although negative trends in many areas at the secondary level began to reverse in 1983-1984.

- Maryland scores showed positive trends. In general, student achievement at all levels exceeds national norms.

- In general, basic skills trends across the states increased during 1983-1984 with the exception of Delaware's scores. Results for secondary school students in Pennsylvania discontinued the consistent downward trends of prior years, as scores began to improve.

The findings suggest that student achievement performance in the four state region (Pennsylvania, New Jersey, Delaware, Maryland) reflects the results of national studies. Long-term achievement trends are generally positive. In fact, findings in several areas are more positive than those

indicated by the national trends. However, the findings also suggest several areas for improvement.

Despite the positive long-term trends overall, there is a decrease in positive long-term trends evidenced as one moves from the elementary to the intermediate and secondary levels. Implications can be drawn from this relative to the allocation of resources across education levels. In terms of school resources, it suggests that more attention be given by schools to programs aimed at the improvement of secondary education. If a movement can be initiated at the secondary level paralleling the emphasis on early childhood and elementary education the nation has experienced over the past decade or more, then perhaps a similar impact on secondary achievement trends can be attained.

In terms of the kinds of skills being taught in recent years, both educational objectives and tests have gravitated toward the concept of "minimum basic skills." The New Jersey Minimum Basic Skills testing program has been one example of this. The increasing movement to minimum high school graduation standards and tests by several states is another. State education agencies are beginning to realize that there is more to "effective schooling" than just the "minimum basic skills." Additional attention clearly needs to be focused on higher order cognitive skills, such as problem solving, reasoning, and critical thinking. New Jersey recently has recognized this problem by initiating a change in the focus of their testing program from a minimum competency test to a wider ranging achievement test as the measure of school and student accountability. Maryland also uses criterion-referenced testing of a wide range of skills

for high school graduation. Finally, the Pennsylvania findings illustrate the need to focus on affective areas as well as cognitive areas.

In summary, overall long-term statewide achievement trends over the past six years are encouraging. The assessments show that schools can have a demonstrable impact on student performance when concerted efforts are targeted at specific problem areas. The recent literature on effective schools, the NAEP reports, and reports of several national study commissions (e.g., the National Commission on Excellence in Education, the National Task Force on Education for Economic Growth, and the Task Force on Federal Elementary and Secondary Educational Policy) have suggested a number of ways for increasing student achievement. RBS' experience with effective schools in the four-state region indicates that many schools are implementing such R&D findings to improve school practices. To a large extent, these improved practices may account for improvements in demonstrated achievement trends in the basic skills. Practitioners need to continue and expand these improvement efforts in order to maximize student performance in all achievement areas (cognitive and affective) at all grade levels.

APPENDIX

APPENDIX

Student Performance Results: Statewide Unconverted Scores

STATE Grade Level Subtest	1978	1980	1981	1982	1983	1984
PENNSYLVANIA - raw scores						
Elementary						
Self-Esteem	62.1	62.3	62.2	62.3	62.6	62.7
Understanding Others	119.0	120.8	119.5	120.2	120.3	121.0
Reading	27.0	27.8	27.4	28.2	27.9	28.1
Writing	28.6	29.2	29.0	29.7	29.8	30.1
Mathematics	36.3	37.6	36.8	37.4	37.5	37.9
Interest in School	55.4	55.4	55.1	54.9	55.2	56.0
Societal Responsibility	42.8	43.7	42.8	43.2	42.8	43.9
Know. Law/Govt.	10.8	11.0	11.1	11.1	11.2	11.4
Health	28.9	29.8	29.4	30.2	30.0	30.2
Creativity	53.5	53.4	53.6	52.4	52.5	54.1
Career Awareness	24.4	24.9	24.5	25.1	24.9	25.2
App. Human Accomp.	147.7	149.6	149.2	150.7	147.5	151.3
Know. Human Accomp.	21.8	21.9	21.3	21.5	21.5	21.7
Information Usage	18.5	19.0	18.7	19.1	19.1	19.4
Intermediate						
Self-Esteem	58.3	58.3	58.2	58.3	29.0	59.7
Understanding Others	112.4	111.8	110.8	111.0	111.9	112.9
Reading	26.9	27.1	26.5	27.1	27.1	27.5
Writing	36.3	36.8	36.2	37.0	37.3	37.6
Mathematics	31.6	32.0	31.3	31.7	31.8	32.1
Interest in School	67.6	68.0	68.2	68.6	69.2	70.7
Societal Responsibility	59.9	61.7	61.0	61.4	61.4	63.0
Know. Law/Govt.	24.9	24.8	24.8	25.1	25.2	25.5
Health	87.4	88.3	86.8	87.0	87.4	88.7
Creativity	47.1	45.6	47.4	46.3	46.2	46.8
Career Awareness	23.0	23.2	23.1	23.5	23.5	23.6
App. Human Accomp.	31.0	130.8	132.2	132.3	131.5	136.6
Know. Human Accomp.	30.3	30.0	29.6	29.3	29.6	28.9
Information Usage	14.9	14.9	14.8	14.9	15.0	15.3

APPENDIX (contd.)

STATE Grade Level Subtest	1978	1980	1981	1982	1983	1984
Secondary						
Self-Esteem	58.9	58.8	59.1	59.5	59.9	60.1
Understanding Others	114.4	113.7	112.9	111.6	112.7	114.5
Reading	25.1	25.4	24.9	24.6	25.1	25.4
Writing	34.7	34.7	34.4	34.3	34.8	35.3
Mathematics	35.4	35.2	34.6	34.5	34.8	35.3
Interest in School	63.5	62.9	64.2	65.6	66.1	66.8
Societal Responsibility	50.7	50.5	50.2	50.1	50.2	51.7
Know. Law/Govt.	24.8	24.9	24.5	24.4	24.7	24.8
Health	80.9	81.3	80.6	81.5	81.9	82.9
Creativity	43.3	41.1	41.9	41.1	41.7	42.3
Career Awareness	22.9	22.9	22.8	22.8	22.9	23.0
App. Human Accomp.	131.9	129.1	128.4	128.7	128.0	130.9
Know. Human Accomp.	28.2	27.1	26.4	26.0	26.2	26.0
Information Usage	17.9	17.9	17.8	17.6	17.9	18.1
NEW JERSEY - MBS scores						
Elementary						
Reading	81.9	84.9	88.9	91.6	---	---
Mathematics	72.5	80.5	83.7	85.9	---	---
Intermediate						
Reading	82.6	83.8	86.1	88.2	90.1	92.5
Mathematics	75.5	78.9	81.1	83.3	83.7	85.6
Secondary						
Reading	88.9	87.8	89.6	90.2	---	---
Mathematics	80.6	81.8	83.4	84.5	---	---

STATE Grade Level Subtest	1978	1980	1981	1982	1983	1984
DELAWARE - NCEs						
Elementary						
Reading	52	57	58	59	60	56
Mathematics	51	57	60	62	63	61
Spelling	51	58	59	N A	62	58
Language	53	60	62	63	64	59
Intermediate						
Reading	52	54	57	58	60	57
Mathematics	50	56	59	60	61	58
Spelling	48	55	57	N A	59	58
Language	50	55	57	61	62	61
Secondary						
Reading	52	54	55	55	56	54
Mathematics	50	54	55	55	56	56
Spelling	48	51	52	N A	55	54
Language	50	53	54	56	58	57

MARYLAND - scale scores & NCE scores			1981		1982		1983		1984	
			Scale Scores	NCE	Scale Scores	NCE	Scale Scores	NCE	Scale Scores	NCE
Elementary										
Reading	--	--	479	59	487	61	487	61	492	64
Mathematics	--	--	450	53	457	57	459	58	464	60
Language	--	--	507	56	516	60	519	61	524	63
Intermediate										
Reading	--	--	558	55	570	59	570	59	576	60
Mathematics	--	--	552	53	562	56	566	58	571	58
Language	--	--	562	53	572	57	575	57	580	59
Secondary (Not tested)										